

EPERC TG7 Call and Proposed Agenda for the 1<sup>st</sup> telematic meeting date : June 3<sup>rd</sup>, 2021 (10,00-13,00 CET)  
(the meeting will be operated by TEAMS<sup>®</sup>)

# Task Group 07

## Fitness for Service and Risk Based Inspection

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### EPERC Task Group 7 Objectives

To Support Safe and Competitive set of rules for Fitness for Service (FFS) and Risk Based Inspection (RBI) of Pressure Equipment used in many different industries:

- Help for application of European Pressure Equipment Directive: Risk Analysis and Instruction notice requirements,
- Ageing management and surveillance/inspection of Pressure Equipment in operation
- Maximum allowable degradation and repair-replacement criteria proposal
- Collection of material properties needs
- Best practices report with justification of all methods and data
- Large knowledge transfer

### 1 Degradation Consequences to consider

4 major degradation consequences, from many different origins:

- excessive deformation and buckling
- thinning and pitting
- cracks
- loss of material properties: thermal ageing, strain ageing...

### 2 Planned Project Tasks

#### 2.1 Introduction

- Overview and "updated comparison" of existing international rules and standards
- Gaps and Needs
- New and future operating conditions, as high pressure, high and low temperature, new internal and external environment (including hydrogen...) including external hazards (seismic, flooding, wind...)
- Origins and mechanisms of the operating plant degradations
- Degradation rate and maximum available degradation

#### 2.2 Crack consequences

- Fracture mechanic parameters: K handbook, J and C\* estimation scheme
- Negligible creep criteria
- Multi-defect interaction and interaction with free surface
- Crack growth rate fatigue, creep, corrosions...
- Maximum allowable crack under monotonic and cyclic loads, including creep effects
- Material Properties:
  - stress-strain curves, cyclic stress-strain curves
  - crack growth rate: fatigue, corrosion, creep and interaction
  - Environmental Effects: water, steam, hydrogen, others...
  - Toughness properties (brittle, ductile, ... ) and cyclic effects, strain ageing and thermal ageing
  - Base metal, Heat Affected Zone (HAZ) and welds
- Residual stresses analysis methods, values and consequences
- Leak before Break procedure
- Typical Examples and Pre-analyze tools, as defect propagation by master curves...

## 2.3 Thinning and Pitting

### 2.3.1 Thinning

- List of mechanisms and environment leading to potential thinning
- Potential thinning areas: as flow accelerated mechanism or other mechanism
- Thinning rate and acceptable criteria
- Interaction of different thinning areas

### 2.3.2 Pitting

- List of mechanisms and environment leading to potential pitting
- Potential pitting areas
- Pitting rate and acceptable criteria

## 2.4 Loss of Material properties

- Thermal ageing
- Strain Ageing
- Others

## 2.5 Excessive deformation and buckling

- Associated to small overload and some compressive loads
- Use of Design code criteria

## 3 Surveillance program and in service inspection (ISI)

- Techniques: for surveillance of key parameters
- ISI optimization: technique, frequency and performance
- Risk Based Inspection: how to move from FFS to RBI, and consequences

## 4 Deliverables

- Road map for project management
  - Existing International Codes & Standards comparison – Gaps and Needs
    - FFS : ASME XI, RSEM/RCC-MRx, R 5 / R 6 / BS7910, API, FITNET, JSME, KEPIC, VERLIFE...
    - RBI : RIMAP, API, ENIQ, ASME-RIM, TWI...
  - Complementary R&D program
  - Recommended practices report:
    - rules proposals associated to validation
    - regularly updated along the Project
  - Benchmarks and Practical case examples
  - Knowledge transfer: EPERC Workshops, Conferences, EPERC training....
  - Code Case proposal toward CEN-TC, different other European Groups and Industry using Pressure Equipment
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## 1<sup>st</sup> meeting Agenda

1. To develop a Group of interesting experts to work on the Project inside EPERC\*: TG 07 with links with other international organization working on the topics (industry, university, professional association, Standards Development Organization...)
2. To discuss, Review, Modify, Improve the present proposal of Tasks
3. To share the different Tasks and to Develop the **Road Map on a 3-year basis**
4. To check the potential contribution and how European Community can contribute
5. Next meeting

EPERC members can register to the meeting using the web site.

Do not forget that in order to take part in the meeting **you have to be an EPERC member** \*. Form for registration of new members is available on the EPERC website:

[\(www.eperc-aisbl.eu/membership/\)](http://www.eperc-aisbl.eu/membership/)

Example of fees: 100 € annual fees for independent expert to join all the EPERC activities, 1200 € for SME, Universities and Research Institutions, 2400 € for large companies.

Registration as member gives you the right to participate for one year in all the EPERC Task Group meetings (see the web site for the complete list of Task Groups)

**Send us back your answer and your first short remarks:**

[info@eperc-aisbl.eu](mailto:info@eperc-aisbl.eu)

**Participants will receive by email the link for the meeting**

\* If you are not familiar with EPERC activities you can check Newsletters 8 and 9 on the EPERC website !

[www.eperc-aisbl.eu](http://www.eperc-aisbl.eu)